(No Model.)

3 Sheets—Sheet 1.

E. ROGERS.

AUTOMATIC BELL STRIKER.

No. 534,010. Patented Feb. 12, 1895.

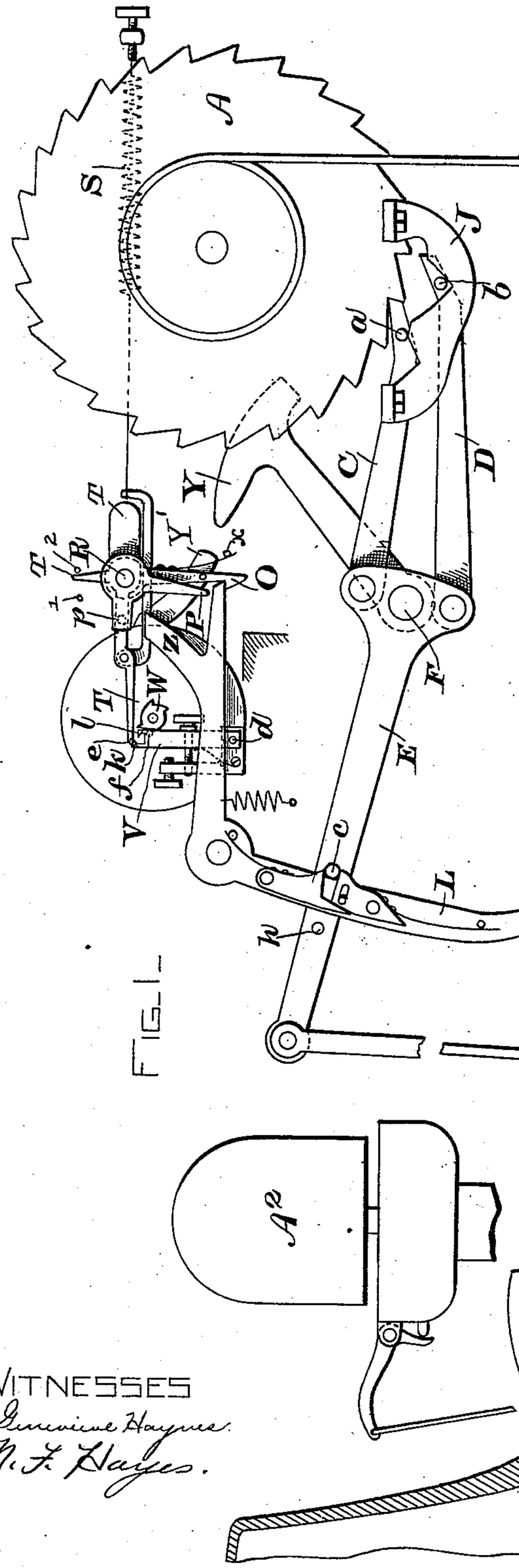

FIG. 1.

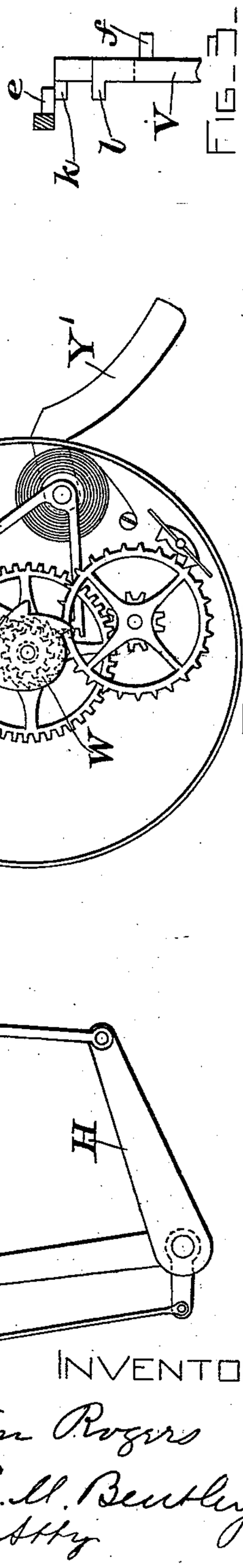

FIG. 2.

FIG. 3.

WITNESSES

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(No Model.) 3 Sheets—Sheet 2.

E. ROGERS.

AUTOMATIC BELL STRIKER.

No. 534,010. Patented Feb. 12, 1895.

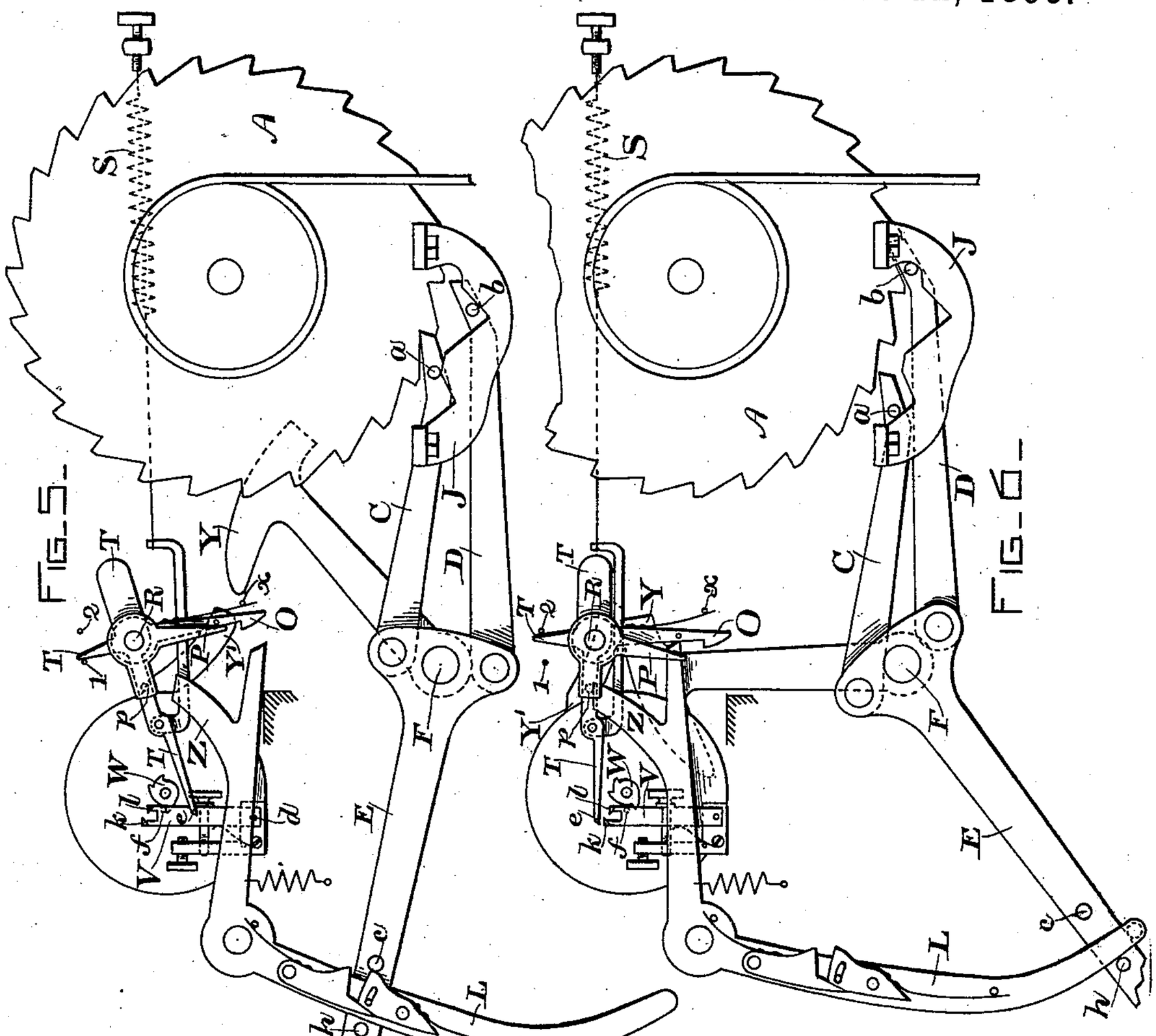

FIG. 5.

FIG. 6.

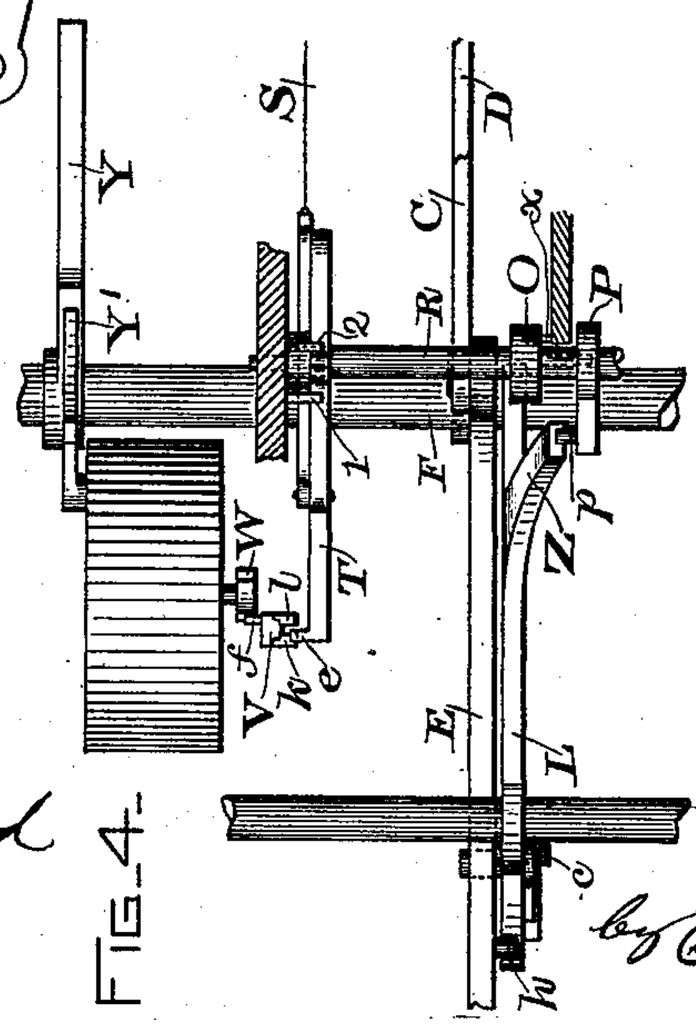

FIG. 4.

WITNESSES

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(No Model.)

3 Sheets—Sheet 3.

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AUTOMATIC BELL STRIKER.

No. 534,010. Patented Feb. 12, 1895.

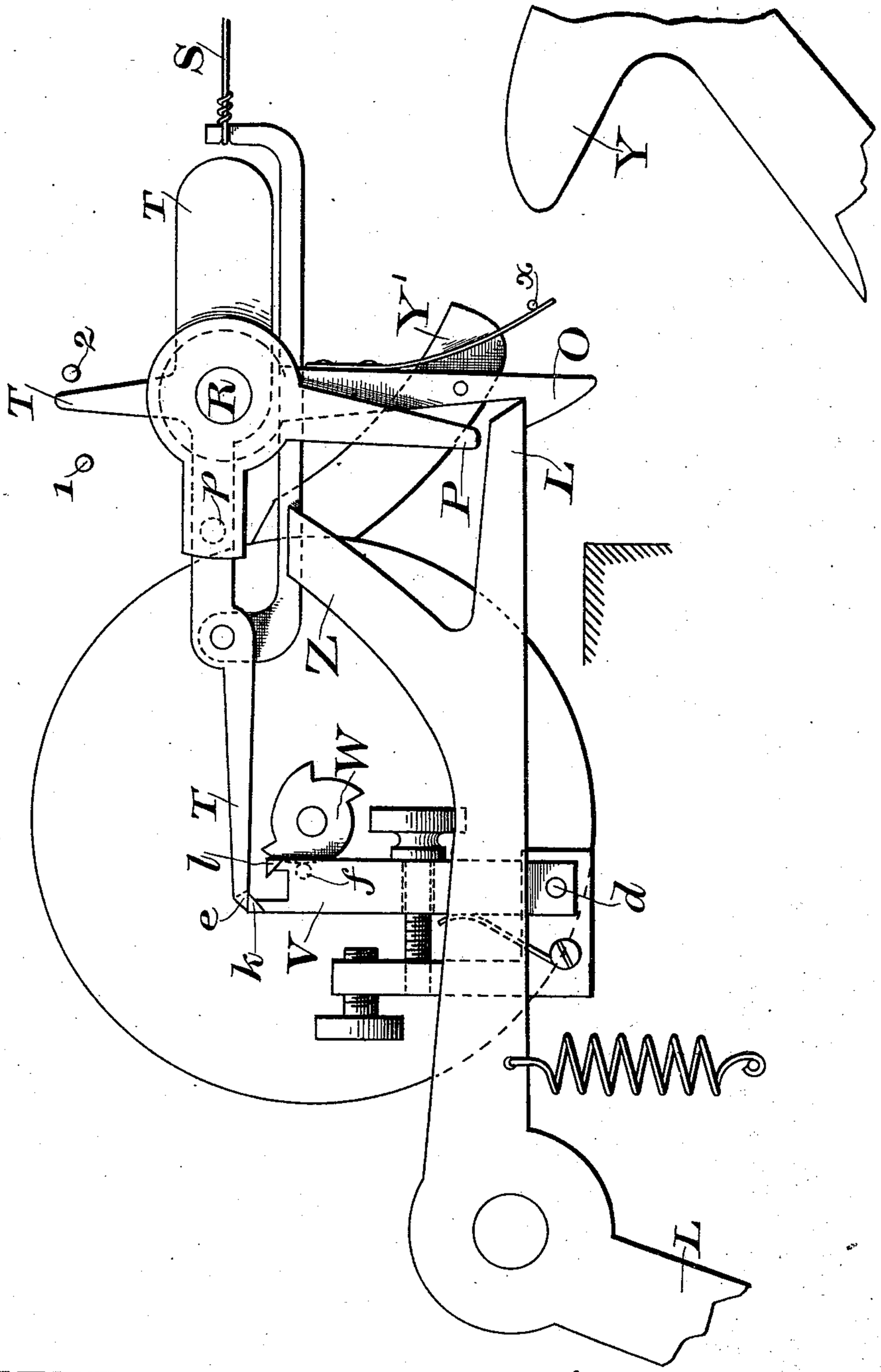

FIG. 7.

WITNESSES

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H. J. Livermore.

INVENTOR

Edwin Rogers

by E. M. Bentley

Atty.

UNITED STATES PATENT OFFICE.

EDWIN ROGERS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE GAMEWELL FIRE-ALARM TELEGRAPH COMPANY, OF NEW YORK, N. Y.

AUTOMATIC BELL-STRIKER.

SPECIFICATION forming part of Letters Patent No. 534,010, dated February 12, 1895.

Application filed April 18, 1894. Serial No. 507,993. (No model.)

To all whom it may concern:

Be it known that I, EDWIN ROGERS, a citizen of the United States, residing at Boston, county of Suffolk, and State of Massachusetts, have invented a certain new and useful Improvement in Automatic Bell-Strikers, of which the following is a specification.

My invention relates to bell strikers which are intended to be kept in continuous operation as in the case of a fog bell, and to maintain a series of blows in a predetermined order so that a bell may not only be heard but its location or other desired signal also indicated by means of the order of the strokes.

My invention consists in certain devices for controlling the actuating mechanism of the striker to produce any desired order of strokes. This device in general embraces a separately driven train and a wheel operated thereby having teeth suitably spaced and adapted to engage a detent on the operating mechanism of the striker.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic representation of the apparatus constituting my invention. Fig. 2 is a detail showing the controller, and Fig. 3 is a detail view showing the detent. Fig. 4 is a top view of the train box, and adjacent shaft showing the relative position of the levers thereon. Figs. 5 and 6 illustrate two positions of the mechanism during the operation. Fig. 7 is an enlarged drawing of the detent mechanism of Fig. 1.

Upon the shaft R are arranged in the order named, beginning in front, the arm P, the latch O provided with a spring designed to engage with the pin *x*, and the lever T. They are shown in Fig. 4. Of these, the arm P and lever T are keyed to the shaft, while the latch O is loose. The arm P has both a substantially horizontal extension and a downwardly projecting one. The horizontal portion has the pin *p*. Two pins 1 and 2 limit the movement of lever T.

A represents a wheel driven by a weight B and forming the main motive power of the mechanism for operating the striker. The teeth of this wheel A are adapted to engage alternately with the ends of levers C and D which are jointed to the arm E at diametrically opposite sides of its pivotal point F. The outer end of arm E is connected by means of rod G with an arm H on the shaft of bell hammer K. The levers C and D are alternately lifted into engagement with teeth of wheel A by means of the inclines on the guide J which inclines engage with pins *a*, *b* on the levers C and D respectively. Normally the arm E is held in the elevated position shown in Fig. 1, and there maintained by the engagement of pin *c* with a latch on one arm of the angle lever L. The other end of this lever normally engages with a latch O, and a pin on the latch O is adapted to be struck by an arm P extending from shaft R whenever the said shaft is turned by the force of spring S, upon the release of detent arm of lever T. The detent arm of lever T has an offsetting pin *e* as shown in Fig. 3 which engages with the spring-pressed detent V. The detent V is pivoted at *d* and has a pin *f* against which impinge in succession the teeth of wheel W driven by a train X. The detent V has two pins *k* and *l* the former of which normally engages with pin *e* on the arm T.

When rotation of wheel W causes the first movement of detent V the pin *e* moves one step until it comes into engagement with pin *l* and by the second movement of the detent the pin *e* is released and the tension of the spring S causes the shaft R to turn. The arm P now strikes the pin on latch O forcing its spring against the pin *x* thereby releasing angle lever L, as shown in Fig. 5, which in turn releases lever E and permits the wheel A to forcibly lift bell hammer K by means of the intermediate mechanism and subsequently by its continued movement (the lever D coming into engagement with its teeth and the lever C passing out of engagement therewith as shown in Fig. 6) throw the bell hammer down until it strikes the bell and is thereafter slightly retracted, as shown in Fig. 1.

The dropping of arm E brings a pin *h* into engagement with the cam surface of angle lever L. This throws up the off-set Z of lever L, which engages the pin *p* on arm P forcing it up and thus turning the shaft R and car-

rying the arm P up above the detent V. When the further motion of the wheel A has caused the pin *c* on lever E to rest in the latches on lever L, the off-set Z is slightly dropped, thus allowing arm C to rest on pin *k* in its normal position. When the off-set Z forces up the arm P, the latch O is released, and by the action of its spring is pushed back so as to again engage and support the off-set Z.

The toothed wheel W driven by train X is adapted to rotate continuously under the action of the said train and the train itself is kept always wound up by means of a cam Y on the outer end of an arm fastened to the shaft of arm E. The cam Y at each stroke of the bell engages with a corresponding arm Y′ which in turn is fastened on the shaft of a sector X′ driven by the spring of the train. The sector X′, by means of a ratchet wheel, acts to drive the train when moving in one direction, but to rotate the ratchet wheel without driving the train when moving in the opposite direction. The toothed wheel W is spaced in any desired way. For instance in the example shown, the teeth are arranged to give the number 12. As wheel W rotates the teeth come successively against pin *f*, on detent V, each in turn thereby moving the detent in one direction and giving the first step in the release of arm T. As each tooth passes pin *f* the spring on detent V forces the detent back into its normal position thereby permitting the final step in the release of the mechanism. At each release a blow is struck as above described and the parts automatically restored to their normal condition. This takes place each time that a tooth of wheel W passes the detent so that the order and number of blows correspond to the arrangement and spacing, of the teeth. By this means any desired signal will be continuously repeated so long as the main motor is maintained in operation.

As will be readily understood the apparatus above described is composed in general of a separately driven train which by means of suitably spaced operating devices controls, according to the spacing and arrangement adopted, the release of the actuating mechanism of the striker.

Instead of a bell it will be apparent that without departing from the spirit of my invention a steam whistle or other similar alarm can be operated. In the drawings I have shown a steam whistle A^2 which may take the place of the bell to be struck by the hammer K, and it is apparent moreover that various mechanical substitutes for the different parts of my apparatus may be employed while still using the invention I have made.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a bell striker, of actuating mechanism therefor, a controlling device for said mechanism consisting of a train, a wheel driven thereby having suitably spaced teeth adapted to engage with the detent of said mechanism, and a connection between the said mechanism and the driving spring of the said train whereby the latter is automatically wound.

2. The combination with a bell striker, of operating mechanism consisting of a motor, a lever carrying at one end a latch for holding the mechanism from moving, and at the other end engaging with a second latch, and means for releasing the said lever consisting of an arm for releasing the second latch, a stepped detent for said arm, an actuating train having a toothed wheel for moving the detent in one direction and a spring for restoring the detent to its normal position.

3. The combination with a bell striker and operating mechanism therefor, of a controller for said mechanism consisting of a clock train, a toothed wheel driven by said train and adapted to engage the detent of the said mechanism, and a spring-driven sector for operating the said train provided with an arm adapted to engage with a rewinding device on the said mechanism.

In testimony whereof I have hereunto set my hand this 13th day of April, 1894.

EDWIN ROGERS.

Witnesses:
WILLIAM E. DECROW,
N. F. HAYES.